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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/037,945	03/10/1998	PIERRE C. FAZAN	MICRON.003C1	7714

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02/20/2002

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EXAMINER

FOURSON III, GEORGE R

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 02/20/2002

22

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/037,945

Applicant(s)

FAZAN ET AL.

Examiner

George Fourson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 8, 9, 11, 12, 14, 16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8, 9, 11, 12, 14, 16 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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The finality of the office action mailed 11/2/00 is withdrawn in view of the inadvertent inclusion of claim 4 in the rejection under 35 USC 103 over Germany '885 alone.

The provisional rejection of claims 1 and 4 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1,4 and 5 of copending Application No. 08/565,991 is withdrawn because the instant claims as amended require particular pressures to be employed which indicates that they are not generic to the claims of the application (see MPEP 806.04(I)).

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1,2,8,9,14,16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over German Patent 266885 (Germany '885 hereinafter).

Germany '885 discloses formation of a field oxide by oxidizing a silicon substrate in a first stage comprising water vapor at 1000°C and a second stage comprising oxygen at atmospheric pressure. The reference discloses that the inclusion of HCl and/or chlorocarbon gas is optional in the second stage. The reference discloses that the process is useful in MOS transistor production which by definition includes formation of a gate oxide. The reference discloses that the first stage of the oxidation enables the process to be performed in reduced time. The abstract contains a typographical error in the last sentence of the "Use/Advantage" in that "less thick" should be --less time-- in view of the disclosure of the thickness previously in the sentence. It would have been within the scope of one of ordinary skill in the art to omit the first stage oxidation with the expectation that the concomitant disclosed advantages of such a step would

not be obtained because, in view of the above pointed to disclosure, the process could be performed without the first stage oxidation, although taking longer. Claims 8-9 are drawn to a field oxide which would not be distinguished from the field oxide produced by such a process. The newly added recitation of performing the process without forming nitride occlusions would be obtained by the process discussed above because the same materials would be treated in the same manner as in the instant invention. Note also that the reference indicates that Kooi ribbon, or nitride formed during the first stage when employed, is eliminated in the second stage.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Germany '885 as applied to claims 1,2,5,8,9 and 10 above, and further in view of Marshall et al.

Reliance on Miyoshi et al is withdrawn because the teachings of Miyoshi are cumulative of the teachings of Marshall et al.

Germany '885 does not disclose oxidation at pressures greater than 5 atm or the temperature of performing the second stage. Marshall et al discloses the suitability of oxidation of silicon in oxygen at pressures of 140-500 atm and temperatures up to 880°C using a silicon nitride oxidation mask to produce field oxide regions. It would have been within the scope of one of ordinary skill in the art to combine the teachings of Germany '885 and Marshall et al to enable the oxidation step of Germany '885 to be performed at a lower temperature (Marshall, page . The choice of the particular recited temperature for each step would have been a matter of routine optimization within the teachings of the references (see Marshall et al, page 2411, the paragraph bridging col.1 and col.2). Marshall et al compares the disclosed process to one using 1atm at 1200°C (col.1). In view of this disclosure and the statement at col.2 that a

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"more optimum set of conditions can obviously be chosen from available data", the choice of particular pressure would have been a matter of routine optimization within the teachings of the reference.

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall et al in view of Sze.

Marshall et al is applied as discussed above. The reference does not disclose oxidation at pressures less than 30 atm. Marshall et al compares the disclosed process to one using 1atm at 1200°C (col.1). In view of this disclosure and the statement at col.2 that a "more optimum set of conditions can obviously be chosen from available data", the choice of particular pressure would have been a matter of routine optimization within the teachings of the reference. Furthermore, Sze discloses the suitability of dry oxidation at pressures less than 30 atm on page 122. It would have been within the scope of one of ordinary skill in the art to combine the teachings of Sze and Marshall et al to achieve the oxidation step of Marshall et al in view of the disclosure of Marshall et al discussed above that the choice of conditions would amount to routine optimization. The formation of electrical devices is implied by the intended use of the oxide produced by Marshall et al as an isolation region. An isolation region by definition electrically isolates devices from each other.

~~(11)~~ **Response to Argument**

Applicant argues that the reference must disclose elimination of the first oxidation step. However, this is not necessary. As discussed above, the reference suggests elimination of the step in disclosing the function of the step in the event that the disclosed function is not desired to be obtained. It is clear from the teachings of the reference that a field oxide could be produced by the second step alone although the process would be longer in duration. MPEP 2144.04(II)(A).

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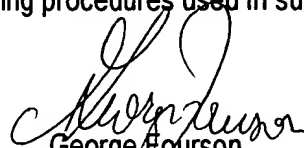
Applicant argues that there is no suggestion or motivation to omit the wet oxidation step of Germany '885. However, in view of the disclosed purpose of such a step, namely shortening the time required to form a desired thickness of field oxide It would have been within the scope of one of ordinary skill in the art to omit the step with the expectation that the disclosed concomitant advantages would not be obtained. See MPEP 2144.04, II, A.

Applicant argues that the references are improperly combined. However, all references relied on are directed to formation of field oxide by local oxidation of silicon and thus are seen to be analogous.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956. See MPEP 203.08.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner George Fourson whose telephone number is (703) 308-2544. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax number for this group is (703)308-7722(7724,3431 and 3432). MPEP 502.01 contains instructions regarding procedures used in submitting responses by facsimile transmission.


George Fourson
Primary Examiner
Art Unit 2823

GFourson
February 13, 2002